

AMENDMENTS TO THE CLAIMS

Claim 1 (Original) An electrolytic processing apparatus comprising:

- a processing electrode for processing a workpiece;
- a feeding electrode for feeding electricity to the workpiece;
- a power source for applying a voltage between the processing electrode and the feeding electrode;
- a pressure tight container housing the processing electrode and the feeding electrode therein; and
- a high-pressure liquid supply system for supplying a high-pressure liquid into the pressure tight container.

Claim 2 (Original) The electrolytic processing apparatus according to claim 1, wherein a contact member is provided between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 3 (Original) The electrolytic processing apparatus according to claim 2, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 4 (Original) The electrolytic processing apparatus according to claim 2, wherein the pressure of the high-pressure liquid to be supplied into the pressure tight container is not lower than 2 kgf/cm².

Claim 5 (Original) The electrolytic processing apparatus according to claim 2, wherein the high-pressure liquid supply system is provided with a heat exchanger for adjusting a temperature of the high-pressure liquid to be supplied into the pressure tight container.

Claim 6 (Original) The electrolytic processing apparatus according to claim 1, further comprising:

- an electrode section including the feeding electrode and the processing electrode; and

a contact member disposed between the electrode section and the workpiece and/or between the processing electrode and the feeding electrode of the electrode section.

Claim 7 (Original) The electrolytic processing apparatus according to claim 6, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 8 (Original) The electrolytic processing apparatus according to claim 6, wherein the pressure of the high-pressure liquid to be supplied into the pressure tight container is not lower than 2 kgf/cm².

Claim 9 (Original) The electrolytic processing apparatus according to claim 6, wherein the high-pressure liquid supply system is provided with a heat exchanger for adjusting a temperature of the high-pressure liquid to be supplied into the pressure tight container.

Claim 10 (Original) The electrolytic processing apparatus according to claim 1, wherein the high-pressure liquid supply system is provided with a heat exchanger for adjusting a temperature of the high-pressure liquid to be supplied into the pressure tight container.

Claim 11 (Original) The electrolytic processing apparatus according to claim 1, wherein the high-pressure liquid supply system is provided with a degassing device for releasing dissolved gas from the high-pressure liquid to be supplied into the pressure tight container.

Claim 12 (Original) An electrolytic processing apparatus comprising:

- a processing electrode for processing a workpiece;
- a feeding electrode for feeding electricity to the workpiece;
- a power source for applying a voltage between the processing electrode and the feeding electrode; and
- a liquid supply system for supplying a liquid between the workpiece and at least one of the processing electrode and the feeding electrode;

wherein the liquid supply system is provided with a heat exchanger for adjusting a temperature of the liquid to be supplied between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 13 (Original) The electrolytic processing apparatus according to claim 12, wherein a contact member is provided between the processing electrode and the workpiece.

Claim 14 (Original) The electrolytic processing apparatus according to claim 13, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 15 (Original) The electrolytic processing apparatus according to claim 13, wherein the heat exchanger adjusts the liquid to be supplied between the workpiece and the contact member so that a liquid temperature becomes not more than 25°C.

Claim 16 (Original) The electrolytic processing apparatus according to claim 12, further comprising:

an electrode section including the feeding electrode and the processing; and
a contact member disposed between the electrode section and the workpiece and/or between the processing electrode and the feeding electrode of the electrode section.

Claim 17 (Original) The electrolytic processing apparatus according to claim 16, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 18 (Original) The electrolytic processing apparatus according to claim 16, wherein the heat exchanger adjusts the liquid to be supplied between the workpiece and the contact member so that a liquid temperature becomes not more than 25°C.

Claim 19 (Original) An electrolytic processing apparatus comprising:

an electrode section including an electrode member comprised of an electrode and an ion exchanger covering a surface of the electrode;

a holder for holding a workpiece and bringing the workpiece into contact with the ion exchanger of the electrode member;

a liquid supply system for supplying a liquid between the ion exchanger and the workpiece held by the holder;

a drive mechanism for causing relative movement between the electrode section and the workpiece; and

a power source to be connected to the electrode of the electrode member of the electrode section;

wherein a continuous contact time of the ion exchanger with a point in a processing surface of the workpiece is not more than 10 msec.

Claim 20 (Original) The electrolytic processing apparatus according to claim 19, wherein the drive mechanism is designed to cause relative movement between the electrode section and the workpiece at a relative speed of not lower than 0.2 m/sec.

Claim 21 (Original) The electrolytic processing apparatus according to claim 19, wherein the ion exchanger covering the electrode is designed to make contact with the workpiece held by the holder with a contact width of 0.2 to 1.5 mm.

Claim 22 (Original) The electrolytic processing apparatus according to claim 21, wherein the drive mechanism is designed to cause relative movement between the electrode section and the workpiece at a relative speed of not lower than 0.2 m/sec.

Claim 23 (Currently Amended) An electrolytic processing apparatus comprising:

an electrode section including an electrode member comprised of an electrode and an ion exchanger covering a surface of the electrode;

~~— a holder for holding a workpiece and bringing the workpiece into contact with the ion exchanger of the electrode member;~~

a liquid supply system for supplying a liquid between the electrode ion exchanger and a ~~the workpiece held by the holder;~~

a drive mechanism for causing relative movement between the electrode section and the workpiece; and

a power source to be connected to the electrode of the electrode member of the electrode section;

wherein an on/off or positive/negative control of the power source is performed in synchronization with the relative movement between the electrode section and the workpiece.

Claim 24 (Currently Amended) The electrolytic processing apparatus according to claim-23 70, wherein the on/off control is performed such that the power source is on when the relative speed between the electrode of the electrode section and the workpiece in the width direction of the electrode section is not lower than 0.2 m/sec.

Claim 25 (Original) An electrolytic processing method comprising:

processing a workpiece in the presence of a high-pressure liquid by applying a voltage to an electrode section.

Claim 26 (Original) The electrolytic processing method according to claim 25, wherein the high-pressure liquid is supplied between the electrode section and the workpiece.

Claim 27 (Original) The electrolytic processing method according to claim 25, wherein the workpiece is processed by immersing the workpiece and the electrode section in the high-pressure liquid.

Claim 28 (Original) The electrolytic processing method according to claim 25, wherein the electrode section includes a processing electrode for processing the workpiece and a feeding electrode for feeding electricity to the workpiece.

Claim 29 (Original) The electrolytic processing method according to claim 25, wherein a pressure of the high-pressure liquid is not lower than 2 kgf/cm².

Claim 30 (Original) The electrolytic processing method according to claim 28, wherein a contact member is provided between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 31 (Original) The electrolytic processing method according to claim 30, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 31 (Original) An electrolytic processing method comprising:
processing a workpiece in the presence of a high-pressure liquid by applying a voltage to an electrode section;
wherein the electrode section includes a processing electrode for processing the workpiece and a feeding electrode for feeding electricity to the workpiece.

Claim 32 (Original) The electrolytic processing method according to claim 32, wherein a contact member is provided between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 34 (Original) The electrolytic processing method according to claim 33, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 35 (Original) An electrolytic processing method comprising:
providing a processing electrode which can come close to or into contact with a workpiece, and a feeding electrode for feeding electricity to the workpiece; and
processing the workpiece by applying a voltage between the processing electrode and the feeding electrode while supplying a liquid at an adjusted temperature between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 36 (Original) The electrolytic processing method according to claim 35, wherein an ion exchanger is provided between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 37 (Original) An electrolytic processing method comprising:

providing a processing electrode which can come close to or into contact with a workpiece, and a feeding electrode for feeding electricity to the workpiece; and

processing the workpiece by applying a voltage between the processing electrode and the feeding electrode while supplying a degassed liquid between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 38 (Original) The electrolytic processing method according to claim 37, wherein an ion exchanger is provided between the workpiece and at least one of the processing electrode and the feeding electrode.

Claim 39 (Original) An electrolytic processing method comprising:

processing a workpiece in the presence of a liquid by applying a voltage to an electrode and moving an ion exchanger, covering a surface of the electrode, and the workpiece held by a holder relative to each other, while keeping the ion exchanger and the workpiece in contact with each other, such that the contact time of the ion exchanger with a point in a processing surface of the workpiece is not more than 10 msec.

Claim 40 (Original) The electrolytic processing method according to claim 39, wherein the ion exchanger and the workpiece held by the holder contact each other with a contact width of 0.2 to 1.5 mm.

Claim 41 (Original) The electrolytic processing method according to claim 39, wherein the ion exchanger and the workpiece held by the holder are moved relative to each other at a relative speed of not less than 0.2 m/sec while keeping them in linear contact with each other.

Claim 42 (Original) The electrolytic processing method according to claim 40, wherein the ion exchanger and the workpiece held by the holder are moved relative to each other at a relative speed of not less than 0.2 m/sec while keeping them in linear contact with each other.

Claim 43 (Currently Amended) An electrolytic processing method comprising:
processing a workpiece in the presence of a liquid by applying a voltage to a plurality of electrodes ~~arranged in parallel and moving an ion exchanger, covering the surfaces of the plurality of electrodes;~~ and the workpiece ~~held by a holder relative to each other while keeping the ion exchanger and the workpiece in contact with each other;~~
wherein the voltage is on/off or positive/negative controlled in synchronization with the relative movement.

Claim 44 (Currently Amended) The electrolytic processing method according to claim 43 71, wherein the liquid is pure water, ultrapure water, or a liquid having an electric conductivity of not more than 500 $\mu\text{S}/\text{cm}$.

Claim 45 (Original) An electrolytic processing method comprising:
bringing a workpiece and a processing electrode close to or into contact with each other;
and
processing the workpiece in the presence of a liquid by applying a voltage between the workpiece and the processing electrode while moving the workpiece and the processing electrode relative to each other;
wherein the relative speed between the workpiece and the processing electrode is made fast in an initial processing stage and slow in a later processing stage.

Claim 46 (Original) The electrolytic processing method according to claim 45, wherein the relative speed between the workpiece and the processing electrode is made slow when a thickness of a film, which is formed in a processing surface of the workpiece and is being processed, has reached a value of not more than 600 nm.

Claim 47 (Original) The electrolytic processing method according to claim 45, wherein the relative speed between the workpiece and the processing electrode is changed stepwise.

Claim 48 (Original) The electrolytic processing method according to claim 45, wherein the relative speed between the workpiece and the processing electrode is changed continuously.

Claim 49 (Original) The electrolytic processing method according to claim 45, wherein a contact member is provided between the workpiece and the processing electrode.

Claim 50 (Original) The electrolytic processing method according to claim 49, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 51 (Original) The electrolytic processing method according to claim 45, further comprising:

- providing a feeding electrode for feeding electricity to the workpiece; and
- disposing a contact member between the feeding electrode and the workpiece.

Claim 52 (Original) The electrolytic processing method according to claim 51, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 53 (Original) An electrolytic processing method comprising:

- bringing a workpiece and a processing electrode close to or into contact with each other;
- and

- processing the workpiece in the presence of a liquid by applying a voltage between the workpiece and the processing electrode while moving the workpiece and the processing electrode relative to each other;

- wherein the relative speed between the workpiece and the processing electrode is made fast in an initial processing stage, slow in an intermediate processing stage, and faster in a later processing stage than the intermediate processing stage.

Claim 54 (Original) The electrolytic processing method according to claim 53, wherein the relative speed between the workpiece and the processing electrode is made slow when a thickness of a film, which is formed in a processing surface of the workpiece and is being

processed, has reached a value of not more than 600 nm, and the relative speed between the workpiece and the processing electrode is made again fast when a thickness of the film has reached a value of 50 to 300 nm.

Claim 55 (Original) The electrolytic processing method according to claim 53, wherein the relative speed between the workpiece and the processing electrode is changed stepwise.

Claim 56 (Original) The electrolytic processing method according to claim 53, wherein the relative speed between the workpiece and the processing electrode is changed continuously.

Claim 57 (Original) The electrolytic processing method according to claim 53, further comprising:

disposing a contact member between the workpiece and the processing electrode.

Claim 58 (Original) The electrolytic processing method according to claim 57, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 59 (Original) The electrolytic processing method according to claim 53, further comprising:

providing a feeding electrode for feeding electricity to the workpiece; and
disposing a contact member between the feeding electrode and the workpiece.

Claim 60 (Original) The electrolytic processing method according to claim 59, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 61 (Original) An electrolytic processing method comprising:

bringing a workpiece and a processing electrode close to or into contact with each other;
and

processing the workpiece in the presence of a liquid by applying a voltage between the workpiece and the processing electrode while moving the workpiece and the processing electrode relative to each other;

wherein the relative speed between the workpiece and the processing electrode is made slow in an initial processing stage and fast in a later processing stage.

Claim 62 (Original) The electrolytic processing method according to claim 61, wherein the relative speed between the workpiece and the processing electrode is made fast when a thickness of a film, which is formed in a processing surface of the workpiece and is being processed, has reached a value of 50 to 300 nm.

Claim 63 (Original) The electrolytic processing method according to claim 61, wherein the relative speed between the workpiece and the processing electrode is changed stepwise.

Claim 64 (Original) The electrolytic processing method according to claim 61, wherein the relative speed between the workpiece and the processing electrode is changed continuously.

Claim 65 (Original) The electrolytic processing method according to claim 61, further comprising:

disposing a contact member between the workpiece and the processing electrode.

Claim 66 (Original) The electrolytic processing method according to claim 65, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 67 (Original) The electrolytic processing method according to claim 61, further comprising:

providing a feeding electrode for feeding electricity to the workpiece; and

disposing a contact member between the feeding electrode and the workpiece.

Claim 68 (Original) The electrolytic processing method according to claim 67, wherein the contact member comprises an ion exchanger or a polishing pad.

Claim 69 (Original) An electrolytic processing method comprising:

bringing a workpiece and a processing electrode close to or into contact with each other;
and

processing the workpiece in the presence of a liquid by applying a voltage between the workpiece and the processing electrode while causing relative movement between the workpiece and the processing electrode by allowing the workpiece and/or the processing electrode to make a cyclic movement;

wherein the cycle of the cyclic movement of the workpiece and/or the processing electrode is changed during processing.

Claim 70 (New) The electrolytic processing method according to claim 23, further comprising:

an ion exchanger covering a surface of the electrode; and

a holder for holding a workpiece and bringing the workpiece into contact with the ion exchanger of the electrode member.

Claim 71 (New) The electrolytic processing method according to claim 43, further comprising:

an ion exchanger covering the surfaces of the plurality of electrodes; and

a holder for holding the workpiece and bringing the workpiece into contact with the ion exchanger of the electrodes.